

SDS Narrative

Community: SHIPAULOVI		Project/Phase Name: Hopi Arsenic Mitigation Project		Econ Feasible: Y	Override Feasibility: N
District: EADO		Number: AZ09981-0601	Priority: 38	Reportable Project? Yes	
Field Office: Polacca		Tribe: HOPI TRIBE OF ARIZONA		Engineering Only: No Engineer: DeCoteau, Jesse	
EPA Region: 09		Reservation: HOPI		Reviewed: Pending (last updated Unknown b Ready to Fund: No (last updated 08/04/2015 b	
Created: 06/10/2004		Self-Gov.: IHS Direct Service			
Last Update: 05/18/2017 by DeCoteau, Jesse					

OM Systems:

Select Systems

System

5500260001--Turquoise Trail Rural Water System (HAMP)

System Type Organization

Water Hopi Public Utility Authority (HPUA)

EPA # Score

0

PDS Projects:

Project	Type	#localHeadContent#																					
PH04S63 -- Hopi First Mesa Arsenic	Regular Project - existing homes	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$800,000</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$800,000</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$800,000	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$800,000
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$800,000																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$800,000																					
PH06D33 -- Hopi Arsenic Study	Planning	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$205,000</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$205,000</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$205,000	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$205,000
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$205,000																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$205,000																					
PH08T38 -- Shungopovi Arsenic	Regular Project - existing homes	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$150,000</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$150,000</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$150,000	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$150,000
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$150,000																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$150,000																					
PH10E37 -- Turquoise Trail Reg Arsenic Mitigat	EPA Funded Project	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$1,857,400</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$1,857,400</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$1,857,400	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$1,857,400
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$1,857,400																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$1,857,400																					
PH11E55 -- Hopi As Mitigation EPA DWTSA 2011	EPA Funded Project	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$1,100,000</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$1,100,000</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$1,100,000	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$1,100,000
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$1,100,000																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$1,100,000																					
PH12E73 -- Hopi Arsenic Mitigation Project EPA	EPA Funded Project	<table> <tr><th colspan="3">Estimated Costs</th></tr> <tr> <th>Service Type</th><th>Planning</th><th>Total</th></tr> <tr><td>Water :</td><td>\$ 0</td><td>\$1,100,000</td></tr> <tr><td>Sewer :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Solid Waste :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>O & M :</td><td>\$ 0</td><td>\$ 0</td></tr> <tr><td>Totals:</td><td>\$ 0</td><td>\$1,100,000</td></tr> </table>	Estimated Costs			Service Type	Planning	Total	Water :	\$ 0	\$1,100,000	Sewer :	\$ 0	\$ 0	Solid Waste :	\$ 0	\$ 0	O & M :	\$ 0	\$ 0	Totals:	\$ 0	\$1,100,000
Estimated Costs																							
Service Type	Planning	Total																					
Water :	\$ 0	\$1,100,000																					
Sewer :	\$ 0	\$ 0																					
Solid Waste :	\$ 0	\$ 0																					
O & M :	\$ 0	\$ 0																					
Totals:	\$ 0	\$1,100,000																					

Service Type	Estimated Costs	
	Planning	Total
Water :	\$ 0	\$1,233,458
Sewer :	\$ 0	\$ 0
Solid Waste :	\$ 0	\$ 0
O & M :	\$ 0	\$ 0
Totals:	\$ 0	\$1,233,458

PH14U62 – Hopi Arsenic Mitigation Project
EPA
Funded
Project

Service Type	Estimated Costs	
	Planning	Total
Water :	\$ 0	\$985,000
Sewer :	\$ 0	\$ 0
Solid Waste :	\$ 0	\$ 0
O & M :	\$ 0	\$ 0
Totals:	\$ 0	\$985,000

Area-Defined Fields

Local Code: ??? - Unspecified

DEFICIENCY LEVEL: 3

Health Impact: 22
Deficiency: 12
Previous Service: 0

RATING SCORES
Capital Cost: 4
O & M Capability: 0
Contribution: 8

Tribal: 8
Other Considerations: 0

Total Score: 54

HOMES

COSTS and Unit Costs (U.C.)

Service	Eligible	Inelig.	Total	Service	IHS Cost	U. C.	Eligible Cost	U. C.	Allow. U. C.	Contrib.	Inelig. Cost	Total Cost
Water	1260	0	1260	Water:	14,735,000	11,694	14,735,000	11,694	32,900			14,735,000
Sewer	0	0	0	Sewer:	0	0	0	0	32,900			0
Solid	0	0	0	Solid:	0	0	0	0	14,100			0
O&M	0	0	0	O & M:	0	N/A	0	N/A	N/A			0
Proj. Homes	1260	0	1260	Total:	\$ 14,735,000	\$ 11,694	\$ 14,735,000	\$ 11,694	\$ 94,000	\$ 0	\$ 0	\$ 14,735,000

Special Requirements:

Arsenic \$2,957,400.00

EXISTING DEFICIENCIES:

Water:

The Hopi Arsenic Mitigation Project (HAMP) is a proposed Tribal rural water system project to address sanitation deficiencies associated with water quality and quantity at the First and Second Mesa Villages of Mishongnovi, Polacca, Shungopavi, Sichomovi, Sipaulovi, Tewa, Walpi of the Hopi Reservation. In January 2001, the EPA reduced the Maximum Contaminant Level (MCL) for arsenic in drinking water from 50 to 10 parts per billion (ppb). Public Water Systems (PWSs) were required to meet the revised standard by January 2006 or be in violation of the Safe Drinking Water Act (SDWA). Eight PWSs (i.e. all distinct utility entities) on the Hopi Reservation exhibit natural arsenic concentrations between 14 and 20 ppb, with five of the PWSs still in violation of the SDWA at this time. The affected population served by the aforementioned PWSs is comprised of approximately 4,200 full-time residents (1,300 homes). Many alternative solutions to the arsenic issues have been explored with each project described herein having become part of what is now cumulatively known as the Hopi Arsenic Mitigation Project (HAMP). The HAMP is an ongoing cooperative effort led by The Hopi Tribe and has undergone significant changes, additions, and involves numerous stakeholders including: the Tribe, Villages, utilities, EPA, IHS, Department of Housing and Urban Development (HUD), Hopi Tribal Housing Authority (HTHA), Bureau of Indian Affairs (BIA), Bureau of Indian Education (BIE), Bureau of Reclamation (BOR), and United States Department of Agriculture (USDA). The Hopi Tribe's primary role is as a focal point in the government to government relationship with the United States as the Tribe's constitution and bylaws describe itself as a union of self-governing Villages that each have their own unique and autonomous form of government structure (e.g. traditional, constitutions subordinate to the Tribe's, elected officials, etc.) Therefore, the Tribe requested the financial and technical assistance of the IHS and EPA on behalf of the tribal members, villages, and PWSs. Since 2004, IHS Projects PH 04-S63, PH 06-D33, PH 08-T38, PH 10-E37, PH 11-E55, PH 12-E73, PH 14-U62, and PH 15-E89 have been funded to provide the requested technical assistance. To-date, approximately \$6.53M in funding has been provided for IHS Projects by the Tribe (\$0.20M), IHS (\$0.95M), and EPA (\$5.38M) with \$3.49M having been spent on planning efforts. The PWS utility organizations that provide potable water (and sewer) to residents of First and Second Mesa vary in their size, structure, and are not necessarily mutually exclusive from the corresponding Village, Tribal, or Federal organizational structure. The PWSs agreed to Arsenic Compliance Plans with the EPA to provide water in compliance with the arsenic MCL by January 2015. None of the PWSs have become compliant with the arsenic MCL to-date, resulting in EPA Enforcement letters being received by the Tribe in January 2017. Finding of Violations letters were received by the Tribe in February 2017 with a deadline in March 2017 to agree to negotiate Administrative Orders on Consent with the EPA. Additionally, the Department of the Interior has expressed interest in participating in the project with respect to the inclusion of Bureau of Indian Affairs (BIA) and Bureau of Indian Education (BIE) facilities at First and Second Mesa, but has yet to execute an agreement with the Hopi Tribe to provide funding. All of the BIA and BIE systems are currently operating arsenic treatment plants to provide potable water and have a planning study identifying the HAMP as their future water production source. Additionally, the BIA Keams Canyon system has recently been subject to EPA enforcement action (i.e. lead) that is not necessarily resultant of their arsenic treatment process chemistry, but is indicative of the state of the system. Due to the remaining cost to complete the HAMP, the planning effort was predicated upon garnering USDA Rural Development (RD) funding since the other stakeholders, except possibly the Tribe, do not have mechanisms to provide the required capital. Technical assistance provided by the Tribe, IHS, and EPA to complete the design required by USDA RD culminated in publication and distribution of the HAMP Preliminary Engineering Report (PER), Environmental Assessment, and supporting reports/documentation in September of 2014. The preferred alternative in the PER is a rural water system that includes two proven wells with a third expansion option, chlorine disinfection, approximately 33.5 miles of water mains ranging from 4-12 inches in diameter, two water storage tanks, and appurtenances. There have been numerous public community outreach meetings throughout the years in addition to a regular monthly EPA conference call emphasizing the HAMP on the first Thursday of the month, which has been held for the past decade. Reception and support for the HAMP is seemingly universal with the primary limitation being lack of funding. The IHS has remained committed to the preferred alternative in the 2014 PER since that time. There has been little substantive action with respect to garnering the funds required to complete the project since the technical documents were completed in 2014. One of the largest obstacles to garnering funds is that The Hopi Tribe is out of compliance with the Single Audit Act as they just submitted the FYE 2012 audit to the Federal Audit Clearinghouse in February 2016 per the Hopi Tutuveni. As long as the Tribe is out of compliance with the Single Audit Act it is unlikely that they will be eligible for Federal funds in the required amount(s). Therefore, the IHS has primarily been moving forward with construction using the existing funds while maintaining a community education role with respect to monthly conference calls and provision of technical assistance to the Tribe, Villages, and utilities. Meanwhile, The Hopi Tribe has submitted the application to USDA for review to ensure that the technical portion is sufficient per the USDA requirements, but will unlikely result in funding until all funding requirements are met. Additionally, the Tribe has not yet made a 25% funding obligation to the HAMP to match the likely USDA requirements. Due to water rights litigation throughout the course of the HAMP, the Bureau of Reclamation has not yet been included in the project. The USDA review of the technical documents of the HAMP is considered a major critical path milestone by the IHS with respect to allocation of resources for addressing comments and potential revisions to the 2014 technical documents. To-date, design assumptions in the technical documents were predicated on constructing the non-treatment alternative as a whole so as to reduce the individual user costs by amortizing any USDA loan component across more users. Therefore, the proposed HAMP is not scoped nor is documented as financially solvent to provide water to PWSs outside of the alternatives outlined therein (i.e. not phased). When projects PH 11-E55 and PH 12-E73 were funded, the assumption was that the funding would be used to construct facilities that have beneficial use regardless of HAMP outcome or construct the HAMP in its entirety with other funds that never materialized due to the above reasons. Therefore, proposed construction scopes under PH 11-E55 and PH 12-E73 were not executed due to significant slippage of the HAMP schedule relative to publication of the 2014 technical documents and lack of agreements at the Tribal level on ownership, user fees, operation, and maintenance of proposed facilities. One of the most significant proposed scopes by the HPUA in 2017 is provision of power to the wells at Turquoise Trail. The Tribe has been in confidential negotiations with Arizona Power Service (APS) and the Navajo Tribal Utility Authority (NTUA) for several years. While the wells can be operated on generators which are scoped to be provided for emergency purposes, it is at prohibitively greater costs than grid power. In February, the Tribe successfully negotiated a HAMP power extension cost of \$1,059,402.21 with NTUA, which was significantly

less than the APS quote of \$4,600,000. The power line extension line item in the PER is \$1,800,000, which is a potential cost saving of \$740,597.79 to the HAMP if the NTUA option is chosen. The current Environmental Assessment states: "A supplemental EA will be prepared to evaluate the environmental effects of electrical power line development and/or connecting the HAMP to the BIA/BIE water systems, after the Tribe decides how they want to proceed on these issues. Biological and cultural resource field surveys will study the project area covered by these future alternatives." Electrical power alignment(s) were not included in the original Environmental Assessment due to the purveyor not being decided/negotiated (i.e. APS vs. NTUA) and the previous potential load of the now defunct Tawa'ovi Community Development. The Tribe is currently pursuing Tribal funds for completion of the power line extensions, but has yet to obligate any funds in writing. 2017 PHX AREA IHS GUIDANCE FOR SDS SUBMISSIONS SCORING: APPENDIX B. DL 4: Water does not meet MCLs at the tap for primary contaminants set by EPA (reduced to DL 3 per IHS HQ Memorandum dated 3/21/2017 citing only "No piped water in home", "Unfiltered surface water used as primary water source", or "Evidence of fecal coliform in drinking water" as DL 4 conditions) APPENDIX C. HI 22: A primary MCL violation Previous Service 0: All homes adequately served by IHS or other Federal agency (water and sewer) in previous projects APPENDIX D. Capital Cost 4: January 2016 Arizona IDL3 Water \$11,613-\$13,547 Contribution 8: 50 percent or more of the project costs normally funded by IHS are other than IHS funds (17% of total funding to-date and not expected to exceed 50%) Tribal Priority: 8

Sewer: None
Sol. Wst.: None
O & M: It is scoped that the Hopi Tribe's newly formed Hopi Public Utility Authority (HPUA) will operate and maintain the majority of the HAMP facilities. The HPUA currently exists administratively, with the Director position having been funded by the Tribe for \$250,000.00. Hiring of a Director is considered a major critical path milestone by IHS with respect to project advancement. However, the legal agreements of ownership, user fees, operation, and maintenance of proposed facilities remain unresolved at the Tribal level.

PROPOSED FACILITIES:

Water: The planning and design funding of this project has generally followed Method 2 of the SFC Project Management Program (PMPro) Project Management Guideline in that it has been a major planning and design project with significant costs to-date per Chapter 5 of the 2003 Criteria for the Sanitation Facilities Construction Program and the linked Project Data System (PDS) projects. Therefore, the PER, Life Cycle Cost Analysis and Comparison of Alternatives, Hopi Public Water System Strategic Plan, and Environmental Assessment are complete at this time and listed in the PROPOSED FACILITIES section as the completed scopes are part of what was originally proposed. Similarly, the recently drilled Turquoise Trail Wells #2 and #3 are intended to serve the First and Second Mesa Villages with potable water. The recently drilled Turquoise Trail Wells #2 and #3 produce 415 gallons per minute each and exhibit arsenic concentrations of 4.7 ppb and 4.2 ppb, respectively. 1 LS Geotechnical Investigations 15 MI APS Power Line Extension 2 EA 375kW Generator 1 EA 40kW Generator 2 EA Bulk Fuel Storage Tank 1 EA Bulk Fuel Storage Tank - 1000 GAL 75,300 LF 12" Water Main, 235 PSI rated 62,350 LF 8" Water Main, 235 PSI rated 5,500 LF 8" Water Main, 305 PSI rated 25,600 LF 6" Water Main, 235 PSI rated 8,300 LF 4" Water Main, 235 PSI rated 22 EA 12" Gate Valves 18 EA 8" Gate Valves 13 EA 6" Gate Valves 8 EA 4" Gate Valves 2 EA Pressure Reducing Valve & Vault 15 EA Air Relief Valves 2 EA 100 hp Submersible Well Pump, Controls, Drop Pipe, etc. 2 EA 60 hp Booster Pump, Controls, Meter, etc. 1 LS 15 hp Booster Station, Controls, etc. 4 EA Altitude Valve & Vault 2 EA Flow Control Valve 4 EA Master Meter 3 EA Existing Tank Interconnection 2 EA Telemetry 2 EA HAMP Disinfection Facility 3 EA Village Disinfection Facility 1 LS Power Extensions to Village Disinfection Facilities 7,050 LF Road Excavation and Repair - Unpaved Open Cut 4,350 LF Road Excavation and Repair - Paved Open Cut 750 LF Paved Road Crossing - Bore with Casing 1 LS 260,000 gallon Water Storage Tank 1 LS 110,000 gallon Water Storage Tank

Sewer: None
Sol. Wst.: None
O & M: 24 DAYS 1-Year Start-Up Assistance 1 LS O&M Materials, Equipment and Space 1 LS O&M Manual Development

Report Criteria

Dataset: Current Data
SDS Project : AZ09981-0601
Reportable? All
Ready to Fund? All